AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings, or versions, of claims.

1-16. (Canceled)

17. (Currently amended) A computer-readable medium storing computer instructions, which when executed, enables a computer system to generate ~~program product comprising a computer useable medium having computer readable program code embodied therein for simulating~~ simulated transient conditions in a circuit using a piecewise constant model, the ~~program product~~ computer instructions comprising ~~program code which, when executed by a computer system, enables the computer system to~~:

~~evaluate~~ evaluating an error criteria to determine a maximum allowable change in one of a current and a voltage, wherein the error criteria is based on an approximate relative timing error;

~~simulate~~ simulating the transient conditions by implementing an adaptive step in the piecewise constant model according to the maximum allowable change; and

~~analyze~~ analyzing the circuit based on a result of the simulation.

18. (Currently amended) The ~~program product~~ computer-readable medium of claim 17, wherein the simulating ~~program code~~ instruction replaces a plurality of predefined steps of the piecewise constant model.

19. (Canceled)

20. (Currently amended) The ~~program product~~ computer-readable medium of claim 17, wherein the evaluating ~~program code~~ instruction executes dynamically during execution of the simulating ~~program code~~ instruction.

21. (Currently amended) The ~~program product~~ computer-readable medium of claim 17, wherein the evaluating ~~program code~~ instruction executes prior to the simulating ~~program code~~ instruction.

22. (Currently amended) The ~~program product~~ computer-readable medium of claim 17, further comprising ~~program code~~ instructions configured to reject the adaptive step in the case that a derivative voltage across a circuit element of interest reverses.

23. (Currently amended) The ~~program product~~ computer-readable medium of claim 17, wherein a plurality of adaptive steps are implemented, and further comprising ~~program code~~ instructions configured to limit the number of adaptive steps.

24. (Currently amended) The ~~program product~~ computer-readable medium of claim 17, wherein the evaluating ~~program code~~ instruction renders the adaptive step at an average value of the maximum allowable change.

25. (Currently amended) A <u>computer-implemented</u> system for simulating transient conditions in a circuit using a piecewise constant model, the system comprising:

    <u>at least one processing unit;</u>

    <u>a memory operably associated with the at least one processing unit; and</u>

    <u>a simulating system storable in memory and executable by the at least one processing unit, the simulating system comprising:</u>

        means for evaluating an error criteria to determine a maximum allowable change in one of a current and a voltage;

        means for simulating the transient conditions by implementing an adaptive step in the piecewise constant model according to the maximum allowable change;

        means for analyzing the circuit based on a result of the simulating; and

        means for rejecting the adaptive step in the case that a derivative voltage across a circuit element of interest reverses.

26. (Currently amended) The <u>computer-implemented</u> system of claim 25, wherein the evaluating means executes dynamically during execution of the simulating means.

27. (Currently amended) The <u>computer-implemented</u> system of claim 25, wherein the evaluating means executes prior to execution of the simulating means.

28. (Canceled)

29. (Currently amended) The <u>computer-implemented</u> system of claim 25, wherein a plurality of adaptive steps are implemented, and further comprising means for limiting the number of adaptive steps.

30. (Currently amended) The <u>computer-implemented</u> system of claim 25, wherein the evaluating means includes means for rendering the adaptive step at an average value of the maximum allowable change.